DOCUMENT RESUME

ED 331 204 EC 300 185

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TITLE Early Language Development in Blind and Severely Visually Impaired Children. Interim Report on Pilot Study.
PUB DATE Jan 90
NOTE 34p.; Study funded by the Mary Kitzlinger Trust.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Blindness; *Child Language; Comprehension; Expressive Language; Foreign Countries; Infants; Interaction; Interpersonal Communication; *Language Acquisition; Language Patterns; Parent Child Relationship; Predictor Variables; Preschool Education; Toddlers; *Visual Impairments
IDENTIFIERS England; *Impairment Severity

ABSTRACT

This study investigated variables that might be associated with outcome differences in language development of 10 children (ages 10-20 months) with blindness or severe visual impairments, attending a developmental vision clinic in southern England. Subjects' early patterns of expressive language development were examined and related to observed patterns of interaction between subjects and their parents. Results showed the effect of even a very small amount of vision upon language development and interaction. Children who had some useful vision either had equal levels of sensori-motor understanding and verbal comprehension, or had an advantage in their level of practical manipulation of objects. However, children who were functionally blind showed a tendency for comprehension to exceed the expected level of sensori-motor understanding. Patterns of early acquired words differed from sighted children, as subjects used a high proportion of personal names and sang words in songs spontaneously. When toys were introduced to the children, the partially sighted children often approached the toys independently but the blind children had to be encouraged to react by the parents, and tended to be wary of or uninterested in something new. (Approximately 50 references.) (JDD)

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Early Language Development in Blind and Severely Visually Impaired Children

Interim Report on Pilot Study

Funded by the Mary Kitzinger Trust

January, 1990

BEST COPY AVAILABLE

(i) Conceptual Review

(ii) Present project and results

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Early Language Development in Blind and Severely Visually Impaired Children

(i) Conceptual review

Researchers have shown an interest in the language development of blind and severely visually impaired children in the past decade for both theoretical and practical reasons. The present study was motivated by the clinical observation that early expressive language development in some blind babies shows a greater advantage over comprehension level than that of others, who in turn show a mixed outcome at later follow-up (McConachie, 1990). There are some pointers in the available literature suggesting possible reasons for this mixed outcome which seemed worthy of further study. Before discussing these, however, it is first necessary to briefly summarise the theoretical indications for the study of language development in blind children and the main findings to date.

Bruner (1975) set the scene for a move away from psycholinguists' emphasis on the acquisition of linguistic structure in the 1960s towards closer consideration of the functions of language and its use in context. Bruner claimed that linguistic concepts are first realised in action, and stressed the importance of mutual play and joint action sequences between caretaker and child as a basis for the acquisition of knowledge which the child will eventually go on to express in conventional language. His claims have been provided with empirical support from a large number of

subsequent research studies which stress the importance of certain forms of preverbal communication for the emergence of language. These preverbal forms include the use of eye contact in regulating early exchanges between mothers and infants (Stern, 1974), the role of gaze direction in monitoring mutual attention to distal objects and events (Bruner, 1977; Collis and Schaffer, 1975) and the use of gestures such as pointing and reaching to communicate various intentions both before and after the acquisition of first words (Bates, Camaioni and Volterra, 1975; Bates, 1979; Dore, 1975). Central to this argument is the role of the caretaker as facilitator in the communicative exchange with the child. As Bruner puts it: "It is the infant's success in achieving joint action (or the mother's success, for that matter) that virtually leads him into the language" (Bruner, 1975, p6).

It is interesting to note that writers on blind infants from within the psychoanalytic tradition (eg Fraiberg, 1974; Wills, 1979) have stressed the importance of finding ways of establishing a close emotional relationship between mother and child in the first year as a motivator for the child to communicate. This issue of maternal sensitivity will be discussed further below. The dominant role played by vision is also apparent in the types of preverbal exchanges described. Hence, one might expect the language development of blind and severely visually impaired children to be seriously impaired as a consequence of being denied access to these visually dominated preverbal interactions.

A second, more general theoretical question concerns the relationship between cognitive development in general and the emergence of language. Studies concerned with this issue proliferated in the 1970s and 1980s as part of the debate on the role of cognition in children's language acquisition (see Rice, 1983, for a review; also Siegel et al, 1985). One influential position is the Piagetian view that the beginning of language is rooted in sensorimotor intelligence, where its cognitive prerequisites are established (Piaget 1951, 1953). Piagetian theory is normally interpreted as giving vision a primary role in sensorimotor intelligence (Cromer, 1973; Piaget and Inhelder, 1969) and hence lack of vision might be expected to exert a negative influence on language acquisition (cf Adelson, 1983). Along these lines, Sonksen (1979) describes how difficult it must be for a blind child to learn to attach an arbitrary label to an object such as a brush when s/he misses all visual perceptual clues to the concept of the object, stimulates fewer verbal and tactile ones (eg eliciting comments from his mother about what he's doing; grabbing the brush) and also misses ones induced by locomotor exploration because this too is likely to be delayed.

The available evidence to date tends to offer more optimistic conclusions concerning the language development of severely visually impaired children than one might expect from assumptions derived from the literature on sighted children, at least in quantitative terms (cf recent reviews by Freeman and Blockberger,

1987; Mills, 1988; Mulford, 1988). Mulford reviewed the evidence obtained from 16 children followed in longitudinal case studies and concluded that: "There is no evidence of major delay in the onset of language or the attainment of lexical milestones for these blind children as a group" (Mulford, 1988, p302). Urwin (1984) has drawn attention to the unduly negative perspective derived from attempting to understand the development of visually impaired children from the viewpoint of the sighted, and has described in detail alternative routes into language followed by the visually impaired children she studied (Urwin 1978, 1984). Both she and other writers (eg Freeman and Blockberger, 1987; Kitzinger, 1984; Prizant, 1985; Wills, 1979) have pointed out the possible beneficial functions of devices often used by visually impaired children such as excessive imitation (in maintaining an adult's attention, keeping a conversation going etc) which might be considered pathological amongst sighted children. It is also clear that subtle and sometimes ambiguous cues such as stilling or hand movements are available to parents of blind children in the absence of visual cues and can be used as an aid in early communication by a sensitive caretaker (Als, Tronick and Brazelton, 1980; Fraiberg 1974, 1977; Urwin, 1984). This is particularly important in view of the utter dependency of the blind baby on other people to initiate interactions (Fraiberg, 1977; Kekelis and Andersen, 1984; Rowland, 1983; Urwin, 1984).

Although there do not appear to be major differences in the attainment of language milestones by sighted and blind children,

there do seem to be some important qualitative differences in the language of the blind which become apparent if language is considered more closely in relation to the context in which it is used. These include a high proportion of labelling rather than requesting used by blind babies in the early stages of language development (Dunlea, 1982; Urwin, 1978), a lack of idiosyncratic or child-created words or words falling into temporary disuse (Andersen, Dunlea and Kekelis, 1984), and differences in the composition of the early lexicon, with visually impaired children generally tending to tie their object labels to very narrow or particular contexts and referents, using a relatively high proportion of names of people (specific nominals) and action words referring to self-actions, fewer general nominals and almost no function words (cf Nelson's (1973) categorization; Andersen et al, 1984; Bigelow, 1982; Dunlea, 1982; Mulford, 1988).

Some writers attribute these qualitative differences to limitations in the sensory experience of the visually impaired which will obviously restrict the exemplars of a particular category of object to which the child has access (cf Sonksen, 1979 above). Modalities other than vision might, however, be used to encode underlying characteristics of objects in a similar way to encoding by sighted children. For example, Bigelow (1982) found that blind children had very reduced early vocabularies for animals and outdoor objects, which sighted children would tend to note visually. However, blind children tended to choose to label

objects which acquired their significance through other channels eg "bird" (auditory experience), "powder" (tactile experience). The benefits of even a very small amount of vision are evident in a child's early lexicon. For example, Urwin (1984) noted that one of the children she studied began to use "there" and "more" to comment on or to request the occurrence or recurrence of objects at 18 months of age, and he was the only one with any useful vision. Other writers have argued that visual impairment may have a detrimental effect on the formation of categories underlying early words (Andersen et al, 1984; Fraiberg, 1977). For example, Andersen et al found that their visually impaired subjects were slow to extend words beyond their original referents and rarely overextended any. They were unable to elicit spontaneous sorting behaviour from the same children and concluded that: "... the absence of visual input has a detrimental effect on category formation, a cognitive difference that leads to a language difference, since categorization schemata are thought to underlie lexical extension" (Andersen et al, 1984, p655). This viewpoint clearly provides support for the Piagetian hypothesis of a link between cognition and language development.

Other writers have suggested that the qualitative differences in the language of the visually impaired may not be a direct consequence of sensory impairment, but rather may reflect patterns of input common to the adults who talk to these children. Blind children may be especially sensitive to language input because they rely on it for information available to

sighted children in a nonlinguistic mode, and indeed Andersen et al (1984) comment on how dependent the early lexicons of visually impaired children seem to be on terms supplied by others. Kekelis and Andersen (1984) compared language directed to blind and sighted children aged between 16 and 22 months. They found that mothers of the visually impaired directed far more imperatives towards their children and also used fewer declaratives and provided less information regarding the functions and attributes of objects, tending to simply repeat labels or request them from the child. The blind children received a particularly high number of requests for action and their mothers tended to be more repetitive in these requests than were the mothers of sighted children. The blind children's mothers were more likely to introduce the topic of conversation themselves, and tended to be more child-centred in the topics they chose (ie talking about the child's own activities or feelings rather than about objects or events in the immediate environment). The authors suggest that this type of input results from mother's attempts to encourage their child to take a more active role in conversation and in exploring the environment, as well as from the difficulties they encounter in establishing what the child is interested in or focusing on. There is some evidence that these properties of adult input directly affect the language produced by children. For example, Urwin (1978) found that the child of parents who used very few object labels had almost no object names in his first 50 words; Kekelis and Andersen (1984) found that by the age of 2 - 3 years their blind subjects were like their mothers in

relying excessively on providing and requesting labels to initiate and sustain interactions. They also used many directives. Interestingly, although the mothers in Kekelis and Andersen's study chose child-centred topics, almost half of these were not supported by a context perceivable to the child. For example, the child might be directed to retrieve an object s/he could neither see nor hear. This type of insensitivity to the focus of the child's interest has been associated with slow language development in normal children (Harris et al, 1986).

A heightened use of imperative forms or directives has been demonstrated in the parental language of a variety of populations that are limited in some way. These include normal children who are very young (eg Bell and Harper, 1977; Cross et al, 1980), mentally retarded children (eg Davis, Stroud and Green, 1988) and physically handicapped children (Barrera and Vella, 1987). White and White (1984) studied maternal input to a group of children with a different sensory impairment - the profoundly deaf - and found a clear connection between the child's current language and maternal use of directives, with the mothers of children whose language skills were least good using the most imperatives. However, they failed to find such a direct relationship between maternal use of directives and the later development of the child, claiming instead that the influence of maternal language operated indirectly via the intervening variable of maternal responsiveness. In other words, it was not so much what the mother said to the child (eg in terms of number of

directives) but how she said it which determined whether she was "sensitive" or "intrusive" and affected outcome for the child. This variable of maternal responsiveness is of interest because, returning to the literature on visually impaired children, there are suggestions or hints by many writers that the degree of parental sensitivity to the child's communicative needs and intentions may be an important factor influencing the large individual differences in outcome (eg Fraiberg, 1977; Mills, 1988; Mulford, 1988; Preisler, 1985; Rowland, 1983; Urwin, 1978, 1984). However, this issue does not appear as yet to have been studied systematically.

The major methodological problems encountered in attempting to study the language development of visually impaired children have been well documented by all the main researchers in the area (cf Mills, 1988; Mulford, 1988; Urwin, 1984). Studies vary in terms of the type of data collected and the type of linguistic analysis they are subjected to, and variations both within and across study populations may account for many of the disagreements found in the literature (Andersen et al, 1984). A very real problem is posed by the need to find children to study who are visually impaired but not disadvantaged in other ways, either mentally, physically or socially. Such children are relatively unusual (eg Mulford (1988) reviews the major studies, both published and unpublished, to date in the area, amounting to a total of 16 children), and those that have been studied represent a heterogeneous group in terms of aetiologies and extent of visual

impairment. Data on children with a little useful vision may well be summated with that of totally blind children (e.g. Kekelis and Andersen, 1984) thereby potentially losing useful contrasts.

We were fortunate for the purposes of the present study in having access to a particularly large group of visually impaired children judged according to the standards set by other studies (an estimated 15 - 20 within one year) who were all regular attenders at a Developmental Vision Clinic serving a wide area of Southern England. Access to such a relatively large sample provides an opportunity to replicate and supplement the results of previous studies in the area, and this was one aim of the present investigation. As stated above, however, the main motivation was to investigate variables which might be associated with differences in outcome for different children, with the obvious clinical implication of then being in a better position to advise parents regarding likely prognosis and effective intervention strategies for their child. It was decided to concentrate on communications produced within the context of interactions between child and caretaker for two main reasons: firstly, because such naturally occurring situations have more direct clinical relevance from the point of view of helping mother and child to communicate more effectively and secondly, to reflect the recent revival of interest in a pragmatic approach to language development. Many of the studies of language development in visually impaired children have focused almost exclusively on the structure of language produced by the child. However, as

Andersen et al (1984) have pointed out, at a purely structural level the language of blind children resembles that of their sighted peers. When examined in the context of interaction, there are consistent discrepancies in language use suggesting that the availability of visual input produces subtle differences in the process of language acquisition, ie "... visual input is an important, and perhaps major, stimulus for the processes underlying acquisition in lexical and pragmatic aspects of language." (Andersen et al, 1984, p662). The study of language in the context of interactions should also provide information regarding the responsiveness and sensitivity of a caretaker to the child's communicative needs, a variable which the available literature suggests merits further investigation. In addition, the attendance of the children involved in the study at a clinic offering full medical, visual and psychological assessment ensures the provision of detailed information regarding each child's visual and neurological status and general cognitive ability, variables which may also be associated with differences in outcome (cf Andersen et al, 1984).

(ii) Present project

The aim of the present project is to describe early patterns of expressive language development in blind and severely visually impaired children and to relate these to observed patterns of interaction between the children and their parents.

Rationale and Method

There follows a summary of the data collected from each family participating in the study, with accompanying rationale:

1. Detailed documentation of each child's visual status. Both blind children and children with severely limited vision were included in the study, and thus amount of available vision could be isolated as a potential variable affecting language development.

2. Documentation of neurological findings of possible relevance to the course of the child's general development.

3. Standardized information regarding each child's cognitive ability, collected in most cases on more than one occasion. This was obtained in order to be able to trace the relationship between cognitive development and language skills in

the same child (which has not been attempted previously, Mills 1988), to provide information regarding the possible cognitive prerequisites for the emergence of language (cf Piagetian hypothesis), and to document differences in general cognitive ability as another possible variable affecting language development.

4. Videotape of naturally occurring interaction between child and caretaker. This was obtained in order to analyse the structure and function of the language and nonverbal communication used by caretakers and children in natural surroundings, with particular attention paid to those aspects which the literature suggests may be associated with differences in language ability, eg. style of communication, maternal sensitivity/responsiveness.

5. Built in to the above open-ended situation was presentation of a standard set of novel toys. The aim of this was to provide a uniform point of comparison for families regarding the communication style and sensitivity variables described above by, for example, examining how a toy is introduced as a new topic, how the use of the toy is negotiated between parent and child, how the interaction is maintained etc. Kekelis and Andersen (1984) found, for instance, that if a new toy were simply labelled by the parent, the blind child was more likely to stereotypically bang it than if it were described more fully.

6. Standard detailed parental interview concerning communication. This was carried out in order to supplement the information obtained via (3) and (4) and to provide the basis for a pragmatic analysis of communication in various everyday situations.

7. Data on emerging words, in the form of a prescribed diary kept by each parent. This was done in order to provide information regarding the content of each child's early lexicon to supplement that obtained in other studies (eg Bigelow, 1982). Parents were also required to record information on the context in which words were first used in order to supplement their classification.

8. All of the above information was also collected from a small sample of sighted children within the appropriate age range. This was done in order to allow at least minimal comparisons to be made with children who have no visual deficit. The majority of other studies rely on the sighted literature for comparison purposes and do not include any controls for their particular experimental set-ups.

9. Finally, access to a relatively large number of families permits one to look for the existence of general trends, as well as giving scope for the examination of individual differences in communication style.

Subjects

Subjects were chosen initially on the basis of clinic records or referral letters. Those children were selected who came from predominantly English-speaking families, who were within the age range during which early language might reasonably be expected to emerge (ie 10 - 20 months approx), who were blind or severely visually impaired, and whose development was otherwise thought to be normal. Following routine developmental assessment in the Developmental Vision Clinic (DVC) at the Wolfson Centre, only those children who still fulfilled the above criteria were included in the final sample (see Table 1). Ten children have been included in some of the data analysis to date. (A further 6 children are about to be seen, or are just too young.)

Procedure

Each child was seen initially with his/her family in the DVC, by a team comprising a psychologist, paediatrician and health visitor. A medical and social history was obtained from the parents, and the child was then given a full developmental assessment. This comprised a detailed documentation of the child's available vision, hearing assessment, physical examination, assessment of fine and gross motor skills and administration of the Reynell-Zinkin Developmental Scales for young visually handicapped children (Reynell, 1979). Following

the assessment, each family was provided with developmental guidance tailored to suit the needs of their particular child. The parents of suitable children were then asked to keep a written record of their child's emerging words (cf Gillham, 1979) and the contexts in which they occurred on prepared sheets, separately for 'imitated' words, 'independent' words and sentences.

Following the clinic visit, each family living within reasonable travelling distance was visited at home by one of the researchers. A 15-minute video recording was first made of the child and parent playing together. Initially, the parent was asked to play with the child "in the way you usually do", using any of the child's toys she wished. A few minutes' "warm-up" period was allowed before the video camera was switched on. After about 5 minutes the researcher asked the parent to show the child three standard novel toys (4 different shaped plastic objects known as 'active baby' (Ambi), a sound tube (Dobbio) and a push 'n merry-go-round (Tomy)). These are all cause and effect toys of differing levels of sophistication. The order in which the toys were presented and the way in which they were used was left entirely up to the parent.

Following the videorecording, each parent was asked a number of standard questions regarding communication. The communication interview was based on the work of Bates (1979), Creaghead and Margulies (1982), Dewart and Summers (1988) and Roth and Spekman

(1984) and was designed to provide as detailed a picture as possible of communicative exchanges between parent and child.

The majority of families were followed up in the clinic 4 to 6 months after the initial visit, when the full developmental assessment was repeated.

Results

Assessment of cognition and language

Results of the children's first assessment with the Reynell-Zinkin Scales are given in Table 2. All children meet the criterion of "no other disability" in terms of being close to or above the expected age equivalent score on sensori-motor understanding and verbal comprehension (subject 1 showing satisfactory sensori-motor performance at 22 months of age).

Of the five children who did not reach for near objects on sight at first assessment, four showed a relative lag in expressive language (on sighted age equivalents, a lag of between one and four and a half months). Three have had a follow-up assessment, and all now show expressive language ahead of comprehension (even greater than the built-in bias in the test's blind age equivalents). Thus, so far, there is no indication of severe delay on testing, which emerged in the 3rd year of life for half of the blind children seen previously in the Developmental Vision Clinic (McConachie, 1990) who had an initial expressive lag.

Table 2 First assessment on Reynell-Zinkin Developmental Scales

Child	Chronological Age (months)	Blind age-equivalent (months) Sensori-motor understanding	Verbal comprehension	Expressive language (structure)
1	16	9-11*	14-19	5- 7
2	20	17-19	23-26	8-10
3	11	13-16	14-19	8-10
4	14	17-19	14-19	23-26
5	17	17-19	19-22	8-10
		Partially-sighted age-equivalent (months)		
		Sensori-motor understanding	Verbal comprehension	Expressive language (structure)
6	13	18-20	14-18	16-19
7	15	32-34	18-21	24-25
8	15	15-18	12-14	6-10
9	14	13-15	14-18	20-22
10	12	18-20	18-21	11-13

* At 22 months of age, Subject 1 scored at an age equivalent of 23 to 25 months on sensori-motor understanding.

The remaining blind child showed the pattern often described (eg Reynell, 1978) of language structure in advance of comprehension, with much of his speech repetitive and imitative.

The children who were able to use visually-directed reaching showed a mixed picture in terms of comprehension/expression discrepancy, all except one within the range found for previous DVC attenders (+ 3 to - 2.5 months range on sighted equivalent ages). The exception is a very able child (7) who is advanced in all areas of development, particularly sensori-motor understanding and expressive language (used with meaning), despite being described in medical correspondence as microcephalic.

The pattern of relationship between cognition and language suggested by the assessment results appears to differ depending on visual level. Children who have some useful vision either have sensori-motor understanding and verbal comprehension about equal, or have an advantage in their level of practical manipulation of objects. However, the children who are functionally blind show a tendency (where there is a discrepancy) for comprehension to exceed the expected level of sensori-motor understanding. At this stage, the blind children are mostly able to understand simple commands in context, such as 'clap your hands'; or with less cueing by parents, a command such as 'show me your hair'. Blind children may be expected to show an added interest in such adult communications, focussed on self-actions

rather than actions with objects. They certainly are reported to have an increased likelihood of using early words to do with self-actions (see p.6).

Thus these apparent differences in relationship between cognition and language may reflect a concentration on areas of experience which are most salient to the child. Such a pattern may become significant if it becomes exaggerated, as in the case of subject 2. At follow-up assessment, her preoccupation wth repetitive self-talk was extreme, and her sensori-motor understanding had not progressed, with comprehension around the level expected for her age. It seems likely that her language habits are actively blocking more useful learning about the way the world works.

2) Analysis of first words

We are able, at this stage, to analyse the first ten to twenty words of four children in the project, from the records of independent (not imitated words) words kept by parents. Two of the children are completely blind (1,2) and two are severely visually impaired (8 and 5, particularly the latter who appeared to have only light perception for his first 18 months, but now reaches on sight for near objects.)

The word records represent the children's progress at around 24 months of age, which is late in comparison with previous case studies summarized by Mulford (1988). Mulford comments that language researchers have generally chosen to focus on the most

successful children, giving an indication of optimal rates of development but not the whole spectrum.

The child with the least impaired vision (8) has a pattern of first words very close to that reported in Gillham (1979) as representative of the most frequent first 20 words in normal children's vocabularies. She had 3 names for people, 2 names for favourite toys, 7 general nominals, 1 action word ('off') and 1 personal-social word ('hello') in her first 14. At this stage, most early word-usage seems to be for labelling, with the exception of 'off' which is a request to get down from her high chair.

The other three children have patterns which deviate from the sighted pattern, but in differing ways. Child 1 has only 3 general nominals in his first 10 words, with 5 names of people, 1 action word ('up') and 1 personal-social word ('yes'). At this point his pattern seems typical of that reported for blind children in having a high proportion of personal names, but atypical in his using much of his first vocabulary for requesting (including 'drink', and 'weetabix' for any food.) His general nominals refer to items which can be touched or tasted rather than seen. Child 8's general nominals include some objects which are primarily seen, such as 'dog' which is most often said in response to a picture of a dog.

The other two children (2 and 5) do not have personal names in

their early vocabulary, which is unusual. Their vocabulary pattern otherwise does seem to reflect their lack of vision in including a high proportion of general nominals used as a label when the child comes in contact with the object (eg door, basket, television, nose). Both have early representation (in comparison with sighted patterns) of modifiers, including 'hot', 'empty', 'silly'. Both children's patterns seem to indicate delayed echoing of adult word-use, applied in appropriate contexts. Child 2 is also singing words in songs spontaneously thereby contributing 'drum', 'shoe' and 'knee' to her first 20 words, which would be unusual in a sighted child.

It seems that, whereas children with an intellectual disability do not differ in patterns of early acquired words from sighted children (Gillham, 1979), severely visually impaired children do so in a variety of ways that reflect their experience of the world. This is much less the case for a child who has fairly useful near vision and can reach for objects early.

3) Analysis of parent-child interaction

At present we have 7 films taken in the children's own homes (except for one taken in The Wolfson Centre residence). Three more have been arranged.

First impressions of looking though the films are of major differences depending on whether the child has some useful vision. Parents of blind children seem to have to work hard to

show off their child's limited repertoire; in the case of children who have some sight, the mutual communication changes throughout the play sequence because the child is initiating interaction about new topics. The point at which the standard toys are introduced also provides interesting contrast. The partially sighted children often approach the toys independently, as they see them and become interested. The blind children have them introduced by the parent, who then has to encourage a reaction from the child who will tend to be wary of or uninterested in something new.

Our approach to categorisation of the observed interaction is in four stages. Firstly, 10 minutes of each tape will be transcribed in a four-column format (parent/child, verbal/non-verbal) to preserve time relationships. Secondly, the interaction will be divided into episodes, defined as maternal utterance(s) about the same topic, or as a repetitive series of child actions on the same object bounded by a maternal comment. The initiator of the episode will be noted. Thirdly, maternal utterances will be coded for their reference to the child's current focus of attention, or to a potential non-verbal context. Their function will be noted, ie. as initiations (questions, statements, commands), or as responses. Responses to a child's language will be further coded for repetitions, expansions or semantic extensions. Fourthly, the child's verbal, vocal and gestural communication will be analysed for its content, and function (eg labelling, repeating, requesting, greeting,

protesting, etc.) The analyses draw primarily on the work of Harris, Jones and Grant (1983), McConachie and Mitchell (1985), Coggins and Carpenter (1981), Cross (1978), Dale (1980) and Nelson (1973). The final format of categorisation is being drawn up currently, and reliability study will then be begun.

4) Interview concerning communication

The information gathered through interview will expand the information available from the videotape, particularly to allow analysis of pragmatic restrictions in communication which may arise from the child's severe visual impairment (eg opportunities to initiate, range of subjects for initiating communication.)

Discussion

The data available at this stage are a subset, confined to standardised assessment, and the first 10 to 20 words. Children take at the least two months, and many much longer, to reach their first fifty recorded words, so final collection of these will require several months more.

The results so far emphasise the effect that even a very small amount of vision may have upon language development and interaction. This subject has been touched on in previous research, but the comparison has more often been between blind and fully sighted children. The restrictions and altered patterns which will still apply to very severely visually impaired children are therefore of importance for research

purposes and for parent counselling.

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